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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/501,627	07/15/2004	Nicolas Guillarme	026032-4787	4873

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EXAMINER

KAPLAN, HAL IRA

ART UNIT	PAPER NUMBER
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2836

DATE MAILED: 01/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/501,627

Applicant(s)

GUILLARME ET AL

Examiner

Hal I. Kaplan

Art Unit

2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,7-11,16-21,25,26,28,29 and 36 is/are rejected.
- 7) ☒ Claim(s) 2,3,6,12-15,22-24,27 and 30-35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 July 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/15/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file. A translation of the international application into the English language, as required by 35 U.S.C. 371(c)(2), has not been received.

Specification

2. The disclosure is objected to because of the following informalities: Paragraph 6, lines 2-4; paragraph 11, line 4; paragraph 12, lines 10 and 11; and paragraph 29, line 5 contain the word "said". As the purpose of the specification is to enable one of ordinary skill in the art to make and/or use the invention, and one of ordinary skill in the art would not understand the form and legal phraseology used in patent claims, such as "means" and "said", they should be removed. Paragraph 11, line 1 contains the phrase "of a multicellular". It appears this should read "the multicellular". Paragraph 26, line 3 contains the phrase "drain at the source". It appears this should read "drain and the source".

Appropriate correction is required.

3. The disclosure is objected to under 37 CFR 1.77 because the background section does not contain a sufficient description of the state of the prior art. The background section, except for paragraph 7, which mentions US Patent No. 6,275,958, contains a brief description of the present invention. The problem(s) involved in the

Art Unit: 2836

prior art which is/are solved by the applicant's invention are not clear. See MPEP §608.01(c).

Drawings

4. The drawings are objected to under 37 CFR 52(b)(1)(ii) because they are not in the English language.

Claim Objections

5. Claim 30 is objected to because of the following informalities: Claim 30, line 13 contains the phrase "arranged in parallel;". It appears this should read "arranged in parallel; and". Appropriate correction is required.

6. Claim 26 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 26 recites the limitation "the DC/DC converter of each of the plurality of cells comprises at least one of a buck converter and a boost converter". A DC/DC converter is by definition either a buck converter, a boost converter, or both.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 16, 28, and 36 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter

Art Unit: 2836

which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 16, 28, and 36 recite the limitation "the first electrical network and second electrical network are components of a vehicle". The specification does not mention a vehicle or the electrical networks being components of a vehicle.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

Art Unit: 2836

not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1, 4, 5, 7-11, 17-21, 25, 26, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over the US patent of Carpenter et al. (6,275,958) in view of the US patent of Hemena et al. (6,160,386).

As to claims 1, 7-9, 17, 18, and 25, Carpenter, drawn to fault detection in a redundant power converter, teaches, in Figures 5 and 6, a DC/DC voltage converter comprising: a first positive terminal (+Vin) and a first negative terminal (ground) for connection respectively to two terminals of a high-voltage electrical network; a second positive terminal (+Vout) and a second negative terminal (ground) for connection respectively to two terminals of a low-voltage electrical network (see column 1, lines 25-28); and n cells (20) connected in parallel, where n is an integer greater than unity, disposed between the first positive (+Vin) and negative (ground) terminals and between the second positive (+Vout) and negative (ground) terminals, each cell (20) comprising a chopper DC/DC converter (see column 2, lines 8-10 and 64-67, and Figure 6), each having a first circuit branch (ground) interconnecting the first and second negative terminals, a second circuit branch including an inductor (19) and interconnecting the first (+Vin) and second (+Vout) positive terminals, chopper means comprising at least one chopper switch (S1), and a management unit (18) adapted to control OFF and ON switching of the chopper switch (S1) with a determined duty ratio (see column 1, lines

Art Unit: 2836

37, 46-51, and 60-63, and Figure 6). Carpenter does not disclose only one protection transistor.

Hemena, drawn to a parallel power system which includes over voltage protection, teaches, in Figure 3B, a DC/DC converter cell comprising a single protection transistor (102) (see column 2, lines 54-55 and column 3, lines 10-13 and 38-44). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the DC/DC converter of Carpenter using cells comprising a single protection transistor as taught by Hemena, in order to reduce the number of parts and the cost.

As to claims 4, 11, and 21, in the converter of Hemena, the single protection transistor (102) in each cell (100(a)) is connected in a high-voltage portion of the cell (see Figure 3B).

As to claims 5, 10, 19, and 20, the protection transistor of Hemena is a MOS transistor (Q2) connected in series in the second circuit branch so as to be immediately adjacent to the first positive terminal (V_{in}) (see Figure 3B). The converter of Carpenter teaches a MOS protection transistor (48) connected in series in the second circuit branch so as to be immediately adjacent to the first positive terminal ($+V_{in}$), with an intrinsic diode connected to the first positive terminal by its cathode (see column 4, lines 48-51 and Figure 5). It would have been obvious to one of ordinary skill in the art, at the time of the invention, to build the converter of Carpenter in view of Hemena, as set forth above, with the MOS protection transistor of Carpenter in place of the MOS protection transistor (102) of Hemena, in order to block an overvoltage resulting from a short of the MOS protection transistor.

As to claim 26, the DC/DC converter of each of the plurality of cells of Carpenter comprises a buck converter (see column 1, lines 25-28).

As to claim 29, the converter of Carpenter comprises a means (48,52) for taking a cell of the plurality of cells out of service independently of the other cells (see column 2, lines 45-48).

Allowable Subject Matter

13. Claims 2, 3, 6, 12-15, 22-24, 27, and 30-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

14. The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 contains allowable subject matter because none of the prior art of record teaches or discloses the intrinsic diode being connected to the inductor by its cathode and to the second positive terminal by its anode, in combination with the remaining claimed features.

Claims 3, 6, 12-14, 22, 23, and 33 contain allowable subject matter because none of the prior art of record teaches or discloses both a single protection transistor in each cell and a protection switch which is common to all of the cells, in combination with the remaining claimed features.

Claims 15, 24, and 30-35 contain allowable subject matter because none of the prior art of record teaches or discloses the components that are dedicated to a

Art Unit: 2836

protection function giving rise to static consumption of power less than 0.5% of the total static consumption of the converter, in combination with the remaining claimed features.

Claim 27 contains allowable subject matter because none of the prior art of record teaches or discloses each of the plurality of cells comprising both a buck converter and a boost converter, in combination with the remaining claimed features.


Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The US patent to Kimble et al. (5,659,208) discloses a similar device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal I. Kaplan whose telephone number is 571-272-8587. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on 571-272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ROBERT L. DEBERADINIS
PRIMARY EXAMINER